

## Radicals Review

-Write each expression using a radical symbol.

1.  $5^{1/2} = \sqrt{5}$

2.  $x^{-1/3} = \frac{1}{\sqrt[3]{x}}$

3.  $5^{2/3}$

$\sqrt[3]{5^2}$

Read the  
cubed root  
of five squared

-Write each expression using an exponent.

4.  $\sqrt{8^4}$

$8^{4/2} = 8^2 = 64$

5.  $\sqrt{x^5}$

$x^{5/2}$

6.  $1/\sqrt{n^2}$

$\frac{1}{n} = n^{-1}$

Solve:

7.  $\sqrt{8n-5}-1=2$

$$\begin{aligned}\sqrt{8n-5} &= 3 \\ (\sqrt{8n-5})^2 &= 3^2 \\ 8n-5 &= 9 \\ 8n &= 14 \\ n &= 7/4\end{aligned}$$

9.  $(2x+1)^{2/3}=25$

$(2x+1)^{2/3} = 25 \rightarrow$

$2x+1 = \sqrt{25^3}$

$2x+1 = 125$

$2x = 124$

$x = 62$

even: 2 solutions

$2x+1 = -125$

$2x = -126$

$x = -63$

8.  $\sqrt{7v-2}+12=7$

$\sqrt{7v-2} = -5$

$(\sqrt{7v-2})^2 = (-5)^2$

$7v-2 = 25$

$\frac{7v}{7} = \frac{27}{7}$

$v = 27/7$

10.  $3x^{2/3}=192$

13.  $x^{3/2}+4=68$

$x^{3/2} = 64$

$x^{3/2} = 64 \rightarrow$  odd: 1 solution

$x = \sqrt[3]{64^2}$

$x = 16$

14.  $3x^{1/2}+5=113$

$3x^{1/2} = 108$

$x^{1/2} = 36$

$x = 1296$

Simplify.

$$1) \sqrt{81x^4} / \sqrt{3x^3} = \frac{\sqrt{81x^4}}{\sqrt{3x^3}}$$

$$\sqrt{27x} = \sqrt{9 \cdot 3x} = 3\sqrt{3x}$$

$$2) \sqrt{25x} / \sqrt{5} = \frac{\sqrt{25x}}{\sqrt{5}} = \sqrt{5x}$$

$$3) \sqrt{81x^9} / \sqrt{3x^4} = \frac{\sqrt{81x^9}}{\sqrt{3x^4}} = \sqrt{27x^5}$$

$$3x^2 \sqrt{3x}$$

$$4) \sqrt{80x^9} / \sqrt{16 \cdot 5x^9} = \frac{\sqrt{80x^9}}{\sqrt{16 \cdot 5x^9}} = 4x^4 \sqrt{5x}$$

$$5) \sqrt[3]{-81x^5y^9} = \sqrt[3]{-27 \cdot 3x^5y^9} = 3xy^3 \sqrt[3]{-3x^5y^9}$$

$$3xy^3$$

$$6) \sqrt[3]{-27a^5b^8} = -3ab^2 \sqrt[3]{a^2b^2}$$

$$-3ab^2 \sqrt[3]{a^2b^2}$$

$$7) 3\sqrt{12} + 8\sqrt{75}$$

$$3\sqrt{4 \cdot 3} + 8\sqrt{25 \cdot 3}$$

$$3 \cdot 2\sqrt{3} + 8 \cdot 5\sqrt{3}$$

$$6\sqrt{3} + 40\sqrt{3}$$

$$46\sqrt{3}$$

$$8) \sqrt{32} + 4\sqrt{72}$$

$$\sqrt{16 \cdot 2} + 4\sqrt{36 \cdot 2}$$

$$4\sqrt{2} + 4 \cdot 6\sqrt{2}$$

$$4\sqrt{2} + 24\sqrt{2} = 28\sqrt{2}$$

$$9) (\sqrt{3} - 4)(\sqrt{3} + 8)$$

$$3 + 8\sqrt{3} - 4\sqrt{3} - 32$$

$$-29 + 4\sqrt{3}$$

$$10) \sqrt{14}(3 + \sqrt{2})$$

$$3\sqrt{14} + \sqrt{28}$$

$$3\sqrt{14} + 2\sqrt{7}$$

(not like radicals... can't + them together)

$$11. \sqrt{x+4} + 3 = 8$$

$$\sqrt{x+4} = 5$$

$$(\sqrt{x+4})^2 = 5^2$$

$$x+4 = 25$$

$$x = 21$$

$$12. \sqrt{3x-2} = 12+x$$

$$3x-2 = (12+x)(12+x)$$

$$3x-2 = 144 + 24x + x^2$$

$$0 = 146 + 21x + x^2$$

$$x^2 + 21x + 146 = 0$$

$$-21 \pm \sqrt{21^2 - 4(1)(146)} = \text{no real solution.}$$

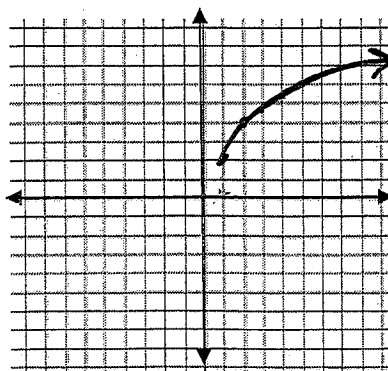
15. Solve for b in the equation:

$$a^2 + b^2 = c^2$$

$$b^2 = c^2 - a^2$$

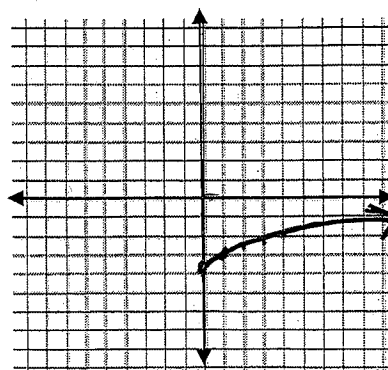
$$b = \sqrt{c^2 - a^2} \quad (\text{This is finished!})$$

16. Graph:  $y = 2\sqrt{x-1} + 2$



x	y
1	2
2	4
3	4.8
4	5.4
5	6

17.  $y = \sqrt{x} - 4$



x	y
0	-4
1	-3
2	-2.6
3	-2.3
4	-2